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ABSTRACT

The paper affirms the necessity to incorporate new technology and new assessment techniques into any restructuring of the way the Florida state system of public schools now functions at the local school level. If the intent of public education is to prepare students to become thinking, contributing members of the 21st century, teachers not only must prepare the students to use the tools, but also not allow technological advancement to overwhelm them and stifle their "humanness." In this context, the arts are a curricular necessity because they provide fertile ground for cultivating in students those "high touch" sensibilities and values that the community intuitively feels are essential for living full and productive lives in an increasingly "high tech" environment. The document examines the way in which technology in the arts classrooms, when properly structured, teaches, enhances, and reinforces opportunities for creative problem solving, critical thinking, self-discipline, responsibility-taking, work ethics, and aesthetics sensibilities. (DQE)

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PREPARING STUDENTS FOR THE TWENTY-FIRST CENTURY: A RATIONALE FOR INTEGRATING NEW TECHNOLOGY INTO SCHOOL ARTS PROGRAMS

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PREPARING STUDENTS FOR THE TWENTY-FIRST CENTURY: A RATIONALE FOR INTEGRATING NEW TECHNOLOGY INTO SCHOOL ARTS PROGRAMS

Technology's role in culture and education is changing. It is influencing what we know about the world and how we communicate. For today's students in Florida's schools, it is important that technology be integrated with teaching and learning in order to prepare students for the twenty-first century, particularly as it is envisioned in Blueprint 2000 (1992) and the SCANS competencies (1991). Student performance standards that address communication skills, information acquisition, and problem solving are especially relevant to technology in the classroom.

Among the educational goals that are related to arts education and technology are:

1. To explore how technology impacts and shapes our experiences, imagination, and perceptions of the world through the use of arts media.
2. To investigate and demonstrate the creative use of technology as integrated in arts instruction.
3. To stimulate students' visual and verbal, critical and creative thinking skills.
4. To demonstrate how technology facilitates multicultural and interdisciplinary instruction in the arts.

Our world today is filled with new technology. From communication satellites to digital cameras, fax machines to music videos, sound synthesizers to video games, electronic circuitry and silicon chips have combined to become an increasingly powerful force in everyday life. It is against the backdrop of this technological blitz that arts teachers must begin to reevaluate and reassert the roles of the arts in the general education in our children. In rethinking the purposes and goals of arts education, there are at least four reasons for linking the learning outcomes of school arts curricula to the expanding presence of technology in our society.

First, the integration of new technology into school arts programs permits students to engage in unique and exciting forms of artistic expression and learning with contemporary media rooted in their everyday lives. This is not to say that "older" more conventional media technologies such as crayons, clay, film, paint, radio, records, slides, wood instruments, and the like are any less worthy for their age. All media technologies have a

place in school arts curricula provided that they can help to promote the ends of arts education. It is simply that newer technologies such as computers, digital cameras, synthesizers, and video deserve special attention in that they collectively constitute a new genre of contemporary art forms that are dramatically altering our cultural landscape. Recognizing that electronic media provide a direct link to the nonschool culture of students, art teachers can (and should) make the use of these new tools to bridge that gap between what happens in the classroom and what is happening in the real world. At the very least, the availability of new technology in arts classrooms may attract students who currently find little value or interest in the arts.

Second, the use of new technology as expressive arts media in schools provides many unique and significant opportunities for fostering the literacy skills required by our technological culture. A child's need to comprehend and participate in our technological culture goes far beyond the scope of what is commonly referred as "computer literacy." To be able to program or use a computer is not enough. To be "literate" in our technological culture demands a deeper understanding of all media technologies and their potential for human interaction, communication, and expression. In this sense, a truly literate person today must not only be able to create and communicate one's own messages with new technology tools but also to analyze, interpret and evaluate the messages that one receives in a technology-mediated environment. Gaining such literacy skills requires education.

In order to communicate and think effectively with electronic media tools, students must learn how to manipulate the language of new technology. This language--images, sound, movement, voice, drama and text--is also the language of the arts. It is incumbent on arts teachers to build on this connection by helping students exploit the expressive potential of electronic media and by educating them to become active, critical consumers of it messages.

Third, the introduction of new technology into arts classrooms provides a unique training laboratory for helping students to meet the high-tech occupational demands of the twenty-first century. Innovative arts curricula in computer animation, desk-top publishing, electronic music, video and multimedia production enable students to harness the power of technology through the discipline and vision of the creative process. Classroom arts projects

involving computer-based networks, instructional television, videodiscs, and CD-ROM allow students to discover the potential of technology as an informational resource which they can use to make new connections between people, places and ideas. Students who have had first-hand experiences with the creative possibilities of electronic technologies and who are able to use new technology tools for accessing information and interpersonal communication will undoubtedly be an invaluable resource in the coming age. In the words of John Scully (1991), Chairman and CEO of Apple Computers: "As a chief executive of a technology company that thrives on creativity, I want to work with people whose imaginations have been unleashed and who tackle problems as challenges rather than obstacles. An education enriched by the creative arts should be considered essential for everyone".

Lastly, the arts themselves serve as a counterbalance to the infusion of new technology into our daily lives. The "computer revolution" of the 1980s brought about dramatic changes of many aspects of contemporary society and more changes are inevitable. It appears that a new wave of technology is coming at us as the fields of computers, consumer electronics and telecommunications merge together. This onslaught of super gadgets and electronic services, according to industry experts, could transform all of our lives for the better. Yet, in spite of all the promises and benefits of high technology, its potential drawbacks are too great to ignore. In particular, its potential for fostering glitz over substance, speed over sustained effort, and entertainment over critical reflection should be of concern to all of us--especially as art teachers.

<u>The Role Of Technology In Real Life: Making Connections to the Arts</u>

When teachers consider why they should use technology in arts programs, the following concepts should be considered:

1. Technology extends our senses and our reach. New technology gives us new ways to look at ourselves and our world. New technologies make new connections between people, places and ideas.
2. Technology pervades our society and culture. New technology is changing the way we work, play, create, and communicate with one another. New technology is changing the world in which we live.
3. In order to use technology as a creative and expressive medium, one needs to develop

methods and skills for interacting with the technology. The use of technology requires human creativity and decision-making. New technologies require us to think and work in new ways.

4. Technology provides tools, materials and processes which enable us to create, perform and study forms of artistic expression. New technology opens up new avenues for exploration and learning in the arts. New technologies do not replace old technologies, they simply increase the media modes available.
5. Artists have always used the technology of their time to satisfy creative and aesthetic needs. New uses of technology in the arts are continuing searches previously undertaken with other technologies. Artists use new technologies to push the boundaries of old art forms and to create completely new art forms. Artists use new tools and new materials to change the way we create and think about the arts.
6. New technology can be used to imitate, create, transform, and synthesize images, sounds and movements. New technology can be used to translate objective information into subjective forms of artistic expression. New technology can be used to translate subjective forms of artistic expression into objective information that can be studied and understood in analytical ways.

New technologies of visualization are providing new and revealing views of the interconnections between things. Computers are changing the way artists create as new uses and applications are being discovered continually. Computer terminals are becoming a common sight in arts classes and electronic pen lights will be as common as pencils and brushes. Knowing how to use these new tools is fast becoming an important prerequisite for artists and performers. Arts students need to learn to use computers and new technologies which are becoming essential tools, much like word processors are for writing.

Technology And Learning In The Arts

In schools throughout the country, the number of students from diverse cultural backgrounds is increasing. It is important that the curriculum address the needs of the multicultural classroom and how differences and similarities between values and beliefs affect communication and relationships among people.

The arts including fine arts, film, popular, and folk arts are a powerful subject area

for understanding people's values and attitudes. How one looks at the arts is influenced at every level by one's cultural values and attitudes. Culture determines what is recognized as art, what role the artist is expected to play, the expectations of the perceiver, and the particular values and beliefs transmitted through works of art. Students should develop the ability to examine and interpret their own cultural assumptions about the art as well as other people's.

Arts educators are living in a time of increasing technological advancements for the classroom. One of these, interactive video, can be used to facilitate the study of the cultural values transmitted through works of art.

There has been an increasing number of videodiscs focusing on artists' lives and museum collections. Interactive media products teach about the historical aspects of the arts. There are excellent products that teachers can use to incorporate arts criticism and the teaching of aesthetics. As arts teachers begin to use videodiscs for arts history, aesthetics, or arts criticism, they can encourage students to become conscious of the cultural values being transmitted through the art. Students can also learn how to critique artworks according to underlying cultural assumptions.

Critical thinking skills can be developed when students are able to compare, contrast, and analyze a multitude of artworks created by the same or different artists, such as from a videodisc source. Students can actively interact with the computer in their search for images. They can be in control of the technology and responsible for their learning, instead of being passive viewers.

The effective application of interactive video and other instructional technologies in the arts classroom is in its infancy. Teachers need to address the issues of culture and gender and how instructional materials can be adapted for use in a multicultural classroom. Furthermore, how students are socialized into specific culture and the different ways they learn about the arts needs to be investigated. Teaching strategies that use social critical approaches can take into account diverse ways of knowing and learning about the arts and develop a sense of empowerment, recognition, and self-esteem in our students (Semrau and Boyer, 1991).

Arts teachers should provide frequent opportunities for students to become actively

engaged in critical interactions and cooperative-learning situations involving technology tools. This can mean many things. It can include, for example, having students working together as a class to stage a public display of their artistic achievements with technology tools (e.g., as in a concert, exhibition, fair, play, or recital). It can also include small groups or "teams" of students acting out their own short stories on videotape, creating computer-animated short features, developing multimedia presentations on selected art movements or historical periods, designing sets and costumes on a computer, producing a video documentary on the arts in the local community, and similar activities. Whatever the case, short term activities and long-range projects which require students to work together to create a unified whole offer rich opportunities for the exchange of ideas among those involved. Learning and assessment become intricately woven together as group members engage in critique, debate, diplomacy, and compromise to successfully achieve their common goal. In the deliberative process, individual ideas become stronger because they must be defended and endorsed by the whole group. As the group translates their decisions into a finished piece of public performance, they produce tangible evidence of their shared insights and understandings which can serve later on as a basis for evaluation by the teacher or by the class as a whole and for showing the community what is being accomplished in their schools' arts program.

Since most school arts curricula today include educational outcomes that emphasize the importance of developing certain habits of mind and attitudes associated with the arts, teachers should gather evidence that shows what effect technology use is having on student behavior in the classroom. In this context, it is encouraging to note that many visual art teachers have reported that when students use computers as a creative medium they tend to be more experimental, take more risks, explore more alternatives, and work more intensely than they do with traditional art media (Greh, 1990). Students also seem to display a more positive attitude toward themselves as artists than when working with conventional art media (Freedman, 1991, 1989).

By documenting changes in such dispositions as enjoyment in learning, persistence, suspension of judgment, risk-taking, and respect for the opinions of others, arts teachers show that they value these types of behaviors in their students. More importantly, if it can

be demonstrated that the use of technology promotes growth in these areas then such technology use should be considered educationally sound and worth continuing in the future.

Among the many benefits of using technology in arts programs are prompt feedback and broad access.

Feedback. A fundamental principle of learning theory is that specific and prompt feedback enhances student learning, performance and motivation. But, faced with large classes of 25 students or more, it is difficult at best for a teacher to provide individual students with immediate feedback on their tasks. The capabilities of video technology suggest several alternatives. For example, a portable video set-up (i.e. camcorder, VCR and large-screen monitor) can be used in a dance or drama classroom to tape and instantly playback student rehearsals or practice sessions. Watching these recordings (repeatedly if necessary) provides students with immediate and concrete feedback which they can analyze to find ways for improving their performance. Video also can be used to offer opportunities for students to compare their own performances on the same task (e.g., such as throwing a bowl on a potter's wheel).

Offering and receiving feedback, however, is of little instructional value if students are unable to use it to improve their performance or to integrate it back into their work. Since computer-based projects are relatively easy to revise, teachers should try to give prompt feedback on plans and progress that students make during a project and allow them to rework their pieces--if they so desire--even after a project is due. In this way, it is possible to assess student's ability and willingness to use the feedback they receive from others to improve their performance or work.

Access. The "information explosion" brought on by the technological advancements in the past thirty years has made it increasingly difficult to provide students with all they need to know to live and work as adults in the twenty-first century. Consequently, the instructional focus in schools today needs to change from teaching facts and rote learning to teaching thinking and self-directed learning. In short, the growing presence of information technologies in our society and schools foster a very different view of learning from the one that has guided teachers for years. That is, students should no longer be asked to simply repeat received information when called upon to do so; rather, they should learn how to

access information, to think critically about it, to use it to interpret new experiences and to go beyond it in creative ways.

Videodisc technology can easily support this kind of active learning environment in arts classrooms in so far as it provides almost immediate access to a wealth of arts information stored in one convenient source. The National Gallery of Art videodisc, for example, offers "visitors" a guided tour through the museum's galleries and allows them to examine more closely over 1600 masterpieces stored as stills and motion sequences on the disc. Similar videodiscs are available that cover the collections of other major art museums around the world as well as a number of contemporary and historical artists. In the performing arts, the selection of relevant videodiscs is somewhat limited at this time. There is no doubt that more arts-related materials on videodiscs will soon be commercially available.

Though videodisc technology offers arts teachers new possibilities for enhancing their classroom presentations, its real power as an educational tool may be realized by placing it in the hands of students. If students are to take charge of their own learning, they must be given the tools that will enable them to find information and to make sense of it. Working directly with a videodisc provides them with such an opportunity. This strategy might involve allowing students to demonstrate their mastery of content by authoring their own creative research reports from videodiscs. Or it might involve presenting performance-based tasks which requires students to access, review, select and organize images and information from a videodisc in order to solve a given problem. For example, visual art students might be asked to assume the role of a "museum curator" and to design an art exhibition around a chosen theme by selecting works of art from a museum videodisc. Either approach makes it possible to assess students' abilities to make inferences about information, to synthesize ideas, to identify a plan of action, and to execute their plan to the best of their abilities.

While videodiscs have yet to have a significant impact on arts education, other forms of video technology that are more prevalent in schools are being used by arts teachers daily to support the curriculum in their areas. The presence of video cassettes, VCRs, video monitors, camcorders, instructional television, cable public-access channels, and closed-circuit television studios in schools have opened up new avenues for teaching and learning in

the arts that were previously inaccessible in the average arts classroom. Computer-based networks, which offer yet another pathway to the world, are also being used by students in many schools today to converse with other individuals and agencies outside the classroom walls--including university professors, community experts, state and local organizations, and students in other schools here and abroad.

This kind of instant accessibility to the world of knowledge means that teachers should no longer look upon themselves as the sole source of information for their students. This does not mean, however, that the information provided by teachers is unimportant. Rather, it suggests that if students are to make effective use of technology as a learning tool they must be given opportunities to actively use information and to experience its effects on their own performance.

Integrating new technology into a school arts classroom can provide a richer and more diverse educational environment with which students actively learn from each other and on their own. Arts teachers who commit to this goal must be willing to assume the dual roles of advisor and facilitator in helping students develop their own understandings and capabilities in using technology tools to carry out challenging projects and tasks that are well-grounded in the real world of the arts. Setting the stage for this type of constructive learning to take place involves creating a climate within the classroom that is conducive to ongoing assessment and constructive feedback between teacher and students and among students themselves.

Both time and space should be provided in the daily arts curriculum for both teacher and students to reflect upon what is happening in the classroom. If students are to make effective use of technology tools in the arts, they need to be aware of what they are doing, why, with which options, and with what results in mind if they are to direct their own creative initiatives and sustain them over time. To encourage this self-monitoring activity on a regular basis, students could be asked to keep personal journals (possibly on a computer disk) in which they assess their daily progress and reflect upon the decisions they make as young artists, choreographers, composers, designers, musicians, and so on. Writing in journals provides students with a source of immediate feedback through which new insights and greater understandings often emerge.

Technology And Teaching In The Arts

Over the past decade, electronic technology has become a permanent and significant part of education in Florida's public schools. Microcomputers are being used at all levels and in many areas of instruction. Video cameras and videocassette recorders have become commonplace in many school programs. The recent emergence of multimedia technology offers exciting new educational possibilities involving the combination of text, sound, images and movement with the computer to tie these components together. More and more teachers are discovering the potential of these new technologies to engage students in active self-directed learning--the importance of which arts teachers have long understood. Educational application of technology in the arts will vary according to the teacher, the students, the particular program goals, and the school context in which arts learning takes place. Arts teachers can best serve their students by promoting a broad perspective on technology which recognizes the validity of using a wide range of tools, materials and processes to advance the goals of arts education and of Blueprint 2000 in Florida's public schools.

The primary purpose of introducing computers or any other technological innovation into an arts classroom is to assist students in achieving the desired outcomes of arts education. A pervasive problem caused by the typical response to computer use in schools is that many teachers focus on teaching about the technology itself and subjugate the core knowledge and skills associated with their discipline. In visual art classrooms, for example, students often use computers to complete simple technical exercises rather than to explore complex aesthetic issues.

Arts teachers need to develop an overall assessment plan which incorporates a broad range of "real world" performance tasks and different technology tools to elicit many distinct behaviors and skills from students in their classrooms. Real world artists and performers generally know their target and the standards they will be judged by beforehand. Students should never have to ask a teacher, "Is this what you want?" Instead, teachers should help their students to understand what is expected of them by providing models of excellent performance as part of instruction and by making known the criteria that will be used to evaluate their performances or productions in advance. In this way, students will be able to monitor the quality of their own work and will more likely pursue the intended instructional

goals with diligence and interest.

Focusing on Authentic Performances

Appraising students' performance in terms of the works they produce with the aid of computer technology currently represents a real challenge for many arts teachers who find it difficult to infer which qualities in a work reflect the machine's capabilities and which reflect the student's capabilities. This dilemma will likely diminish in time as electronic technologies become well integrated into the mainstream of traditional arts practices and as teachers become more familiar with what their students are able to do with these new tools in a classroom setting.

Teachers should focus on how well students use their knowledge, skills and the capabilities offered by the technology to solve the problem at hand rather than on how the technology enables or hinders students in the problem-solving process. If the problem posed is authentic to the arts,it would certainly seem legitimate to subject the works that students create with the aid of electronic tools to the same kind of criteria that is used to evaluate more conventional arts tools or media. Accordingly, arts teachers will need to rely on their professional knowledge of their discipline and their knowledge of pedagogy, to judge the quality of student performance in their classrooms. Arts teachers should design authentic performance-based challenges for their classes that require students to apply their knowledge and skills in exploring various aspects of the arts as they function within the schools walls and beyond.

If properly planned, technology-enhanced projects can provide rich opportunities to document student learning and performance. For instance, by asking students to periodically report on their progress during the course of a project (e.g., through individual conferences,

journal-keeping, peer-coaching, group critiques, etc.) teachers can secure valuable evidence of students' growing abilities to identify and execute a plan of action; to gather and synthesize relevant information; to monitor and appraise their own thought processes; to use appropriate terminology; and to evaluate and revise their own work. When these interim assessments are combined with final evaluations of the students' finished products, a vivid portrait emerges of students' knowledge and abilities at a particular moment in time.

Engaging the Full Energy, Interest, and Intellect of Students

For many arts teachers, technology has provided an answer to unmotivated students. There have been numerous reports by practicing arts teachers of a dramatic increase in interest and excitement among their students as a direct result of introducing computers into the curriculum. The novelty and ease of working with a computer as a creative tool apparently releases inhibitions. In visual art classrooms, for example, students afraid of drawing with a pencil are often quick to try their hand at drawing with a computer. Clearly, the potential of technology to spark student interest should be taken into consideration in determining its value or place in school arts programs. Indeed, if creative applications of computers can attract high school students who normally would never think of enrolling in arts classes (especially those considered "at-risk"), then its use in school arts programs needs no other justification. Arts teachers should be careful not to rely on technology itself to motivate students; rather, they should attempt to structure technology applications in their classrooms around intellectually stimulating content that students will find meaningful and intrinsically rewarding to learn.

Offering Students a Variety of Ways to Show What They Know and Are Able to Do

The introduction of computers and other new technologies into school arts programs

offers students a wider diversity of possibilities for expressiveness than were available before and an expansion of interesting opportunities to share their knowledge and skills with others. It would therefore seem reasonable to employ a variety of assessment methods and strategies in a technology-enhanced arts curriculum to accommodate the full range of creative approaches and solutions that students may develop with new technology tools. This means that arts teachers will need to present open-ended classroom projects or performance tasks that provide sufficient options for students to explore many different approaches, perspectives and solutions with the tools and materials made available to them. This also means that teachers themselves will need to be open- minded and receptive to the myriad of ways that students may interpret and carry out the projects or tasks set before them.

The availability of electronic technologies in arts classrooms affords students new possibilities for portfolio development. Video technology can be used by drama students, for example, to record their individual performances in classroom exercises (both improvisional and scripted), in production rehearsals, in school plays, and in auditions for community theatrical productions. These taped presentations may then be placed in the students' portfolios (if they desire) to serve later on as basis for assessment by the teacher and as a self-assessment tool for the students themselves. Such documented evidence will be of interest not only to teachers, but also to school administrators, to parents, and to potential employers if a student decides to pursue a career in theatre, television or film.

Conclusion

In the final analysis, there is no question that the ability of arts teachers to create the kind of optimal learning environment for students that is possible with new technology tools depends largely on what they are able to do within the constraints of their curriculum, budget, time, and available resources. Given the present fiscal conditions that public schools are operating within across the state, it is unfortunate that most arts teachers are not able to realize the maximum potential of computers and other new technologies in their programs at this time. Still, the school reforms that have been recently mandated by the Florida Legislature suggest that there is hope for the future. The vision articulated in *Blueprint 2000* (1992) calls for massive restructuring in the way the state system of public schools now functions in order to better prepare Florida students to live and work in the twenty-first

century. While all of the implications and challenges inherent in this proposal have yet to be realized, it is clear that new technology tools and new assessment techniques must be incorporated into any restructuring efforts at the local school level.

If the intent of public education is to prepare students to become thinking, contributing members of the twenty-first century, we must not allow technological advancement to overwhelm them, numb their aesthetic sensibilities, or dictate their personal identities. Rather, we must help students sustain their humanness in a highly technologized world. As John Naisbitt, author of *Megatrends (1982),* suggests, "...whenever new technology is introduced into society, there must be a counterbalancing human response--that is, *high touch*--or the technology is rejected."

In this context, the arts are a curricular necessity because they provide fertile ground for cultivating in students those "high touch" sensibilities and values that we intuitively feel are essential for living full and productive lives in an increasingly artificial "high tech" environment. Some of these uniquely human qualities nurtured in arts classrooms include: the willingness to take chances, challenge convention, and explore the unknown; the desire to work honestly, with self-discipline, while acknowledging the success or failure of one's endeavors; the ability to appraise and defend what is personally and socially important; as well as the capacity to appreciate the warmth of a cello being bowed or plucked, the gracefulness of a ballet dancer, the unpredictability of watercolor paint being applied to a wet surface, the pliability of clay being formed on a potter's wheel, and the excitement of a live dramatic performance.

In the end, whatever technologies are brought to bear on the arts learning process, students must learn to use the tools they have available to think, to imagine, to create, to take on the impossible, to play with ideas, to explore, and to feel what it means to be human. As arts teachers, seeing to it that this kind of authentic learning takes place in our classrooms may be the greatest investment we can make in our students' future.

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